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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,908	11/13/2003	Anton Nekovar	32860-000660/US	7317
30596	7590	12/08/2005	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.			HO, ALLEN C	
P.O.BOX 8910			ART UNIT	
RESTON, VA 20195			PAPER NUMBER	
			2882	

DATE MAILED: 12/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

h-a

<b>Office Action Summary</b>	<b>Application No.</b> 10/705,908	<b>Applicant(s)</b> NEKOVAR, ANTON	
	<b>Examiner</b> Allen C. Ho	<b>Art Unit</b> 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 September 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 2, 3, 6, 19, and 20 are objected to because of the following informalities:  
  
Claims 2, 3, 6, 19, and 20 recite the limitation "the x-ray diagnostic system". There is insufficient antecedent basis for this limitation in the claim.  
  
Appropriate correction is required.
2. Claim 17 is objected to because of the following informalities:  
  
Line 13, "uppressing" should be replaced by --suppressing--.  
  
Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 5 and 10-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Claims 5 and 10-16 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: C-arm.

Claims 5 and 10-16 recite a phase-angle sensor. However, it is unclear what is the phase-angle that it measures. Without a C-arm to support the CCD camera, this phase-angle cannot be defined.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-3, 6, and 17-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Tamura *et al.* (U. S. Pub. No. 2002/0186813 A1).

With regard to claim 1, Tamura *et al.* disclosed a diagnostic system (Fig. 21), comprising: a CCD camera (5004; paragraph [0013]); a device (x-ray radiation switch) for generating external trigger pulses (paragraph [0012]); and a system control (5002) configured to: (1) control, in the absence of x-radiation, a readout of the CCD camera without a desired signal including image information at regular time intervals (paragraph [0037]); (2) control, when an external trigger pulse occurs at a point in time at which no readout of the CCD camera is to take place, triggering of a readout of the CCD camera without a desired signal including image information and subsequently triggering an exposure of the CCD camera (paragraphs [0037], [0038], and [0044]); and (3) suppress (interrupt) a readout without a desired signal including

image information before an exposure of the CCD camera when an external trigger pulse occurs at a point in time at which a readout of the CCD camera is to take place (paragraph [0045]).

With regard to claim 2, Tamura *et al.* disclosed the diagnostic system as claimed in claim 1, wherein, when an external trigger pulse occurs at a point in time at which a readout of the CCD camera is to take place, the diagnostic system is immediately triggered for the emission of x-radiation and the useful signal is subsequently read out (paragraphs [0038]-[0045]).

With regard to claim 3, Tamura *et al.* disclosed the diagnostic system as claimed in claim 1, wherein, when an external trigger pulse occurs at a point in time at which no readout of the CCD camera is to take place, a readout without a useful signal is initially carried out and then the diagnostic system is subsequently triggered for the emission of x-radiation via an x-ray emitter (paragraphs [0038]-[0044]).

With regard to claim 6, Tamura *et al.* disclosed the diagnostic system as claimed in claim 2, wherein, when an external trigger pulse occurs at a point in time at which no readout of the CCD camera is to take place, a readout without a useful signal is initially carried out and then the diagnostic system is subsequently triggered for the emission of x-radiation via an x-ray emitter (paragraphs [0038]- [0044]).

With regard to claim 17, Tamura *et al.* disclosed a diagnostic system, comprising: a CCD camera (5004); means (x-ray radiation switch) for generating an external trigger pulse; and means (5002) for providing a readout of the CCD camera without a desired signal including image information before an exposure of the CCD camera when an external trigger pulse is generated at a time when no readout of the CCD is to take place (paragraphs [0037]-[0044]); and means (5002) for suppressing (interrupting) a readout without a desired signal including image

information before an exposure of the CCD camera when an external trigger pulse is generated at a time when a readout of the CCD camera is to take place (paragraph [0045]).

With regard to claim 18, Tamura *et al.* disclosed the diagnostic system as claimed in claim 17, wherein the means for providing is configured to read the CCD camera without a useful signal at a regular time intervals in the absence of x-radiation (paragraph [0037]).

With regard to claim 19, Tamura *et al.* disclosed the diagnostic system as claimed in claim 17, wherein, when an external trigger pulse occurs at a point in time at which a readout of the CCD camera is to take place, the x-ray diagnostic system is immediately triggered for the emission of x-radiation and the useful signal is subsequently read out (paragraph [0038]).

With regard to claim 20, Tamura *et al.* disclosed the diagnostic system as claimed in claim 17, wherein, when an external trigger pulse occurs at a point in time at which no readout of the CCD camera is to take place, a readout without a useful signal is initially carried out and then the diagnostic system is subsequently triggered for the emission of x-radiation via an x-ray emitter (paragraphs [0037]-[0044]).

With regard to claim 21, Tamura *et al.* disclosed the diagnostic system as claimed in claim 1, wherein the external trigger pulses are generated in a non-predetermined fashion (when x-ray radiation switch is pressed).

With regard to claim 22, Tamura *et al.* disclosed the diagnostic system as claimed in claim 1, wherein the external trigger pulses are generated in a non-periodic fashion (when x-ray radiation switch is pressed).

With regard to claim 23, Tamura *et al.* disclosed the diagnostic system as claimed in claim 17, wherein the external trigger pulses are generated in a non-predetermined fashion (when x-ray radiation switch is pressed).

With regard to claim 24, Tamura *et al.* disclosed the diagnostic system as claimed in claim 17, wherein the external trigger pulses are generated in a non-periodic fashion (when x-ray radiation switch is pressed).

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura *et al.* (U. S. Pub. No. 2002/0186813 A1) as applied to claims 1-3 and 6 above, and further in view of Haaker *et al.* (U. S. Patent No. 5,117,446).

With regard to claims 4 and 7-9, Tamura *et al.* disclosed the diagnostic system as claimed in claims 1-3 and 6. However, Tamura *et al.* failed to teach that the device for generating external trigger pulses is an ECG electrode.

Haaker *et al.* disclosed a diagnostic system comprising an ECG electrode (26) for generating external trigger pulses. Haaker *et al.* taught that the same cardiac phase could be repeatedly imaged by synchronizing the x-ray pulses with an ECG signal (column 3, lines 30-39).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ an ECG for generating external trigger pulses, since a person would be motivated to examine a particular cardiac phase by synchronizing x-ray pulses with an ECG signal.

### *Response to Arguments*

10. Applicant's arguments filed 20 September 2005 with respect to claims 1-20 have been fully considered and are persuasive. The rejections of claims 1-20 under 35 U.S.C. 112, second paragraph, have been withdrawn.

11. Applicant's arguments filed 20 September 2005 have been fully considered but they are not persuasive.

With regard to claims 5 and 10-16, the applicant argues that the phase-angle sensor does not require a C-arm because it simply must detect the angle of x-radiation. However, the applicant further argues that the angle of the x-radiation can be detected with the aid of a C-arm or at the x-ray radiation, for example, if the x-radiator and the x-ray amplifier are mounted separately. This argument simply confirms that the angles can only be detected with the presence of a C-arm. Without a C-arm to support the x-ray source and the CCD camera on opposite sides to form an x-radiation axis, the angle of x-radiation is not defined or meaningful. Indeed, the angle of x-radiation can only be defined in terms of a rotation angle of a C-arm. Therefore, the rejections are being maintained.

The applicant argues that there is no correlation between an external trigger signal and whether or not a CCD readout does or does not take place. The examiner respectfully disagrees



with this argument. Tamura *et al.* disclosed a diagnostic system that comprises a CCD camera. In the absence of x-rays, a readout (initialization process that comprises refresh and idle read processes) of the CCD camera takes place at regular time intervals (TI) to sweep out accumulated dark charges (paragraph [0037], lines 3-6). When an external trigger pulse (x-ray radiation switch is pressed to generate an x-ray radiation request signal) occurs at a point in time (T1) at which no readout of the CCD camera is to take place (a timing other than those of the refresh and idle read processes), the pulse triggers a readout of the CCD camera without a desired signal including image information (paragraph [0037], line 6 - paragraph [0038], line 3). When an external trigger pulse occurs at a point is time at which a readout of the CCD camera is to take place, a readout without desired signal including image information is suppressed (interrupted) before an exposure of the CCD camera (paragraph [0045]). Since Tamura *et al.* disclosed every element recited in the claims, the rejections are being maintained.

### ***Conclusion***

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached at (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Allen C. Ho  
Primary Examiner  
Art Unit 2882

30 November 2005